Environmental Consultants

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May 17, 1993

James Gregory, Esquire
Maraziti, Falcon & Gregory
65 Madison Avenue
Morristown, NJ 07960

Re: Water-Soluble Organics/IEA-NJ Comments

Dear Jim:

As you requested, I have reviewed the IEA/N.J. letter to Mark Rogart of CPS Chemical Company, Inc. I am very concerned that IEA/N.J. is not capable of complying with the method as written, "Analytical Methods for Water Soluble Semivolatile Organic Compounds," Revision 2.0, dated January 29, 1993.

There is a critical portion of the GC/MS analysis which uses a special deconvolution software package. Without this software package, mass spectra of reasonable quality cannot be produced. This was shown with our data package for the analysis of groundwater obtained from monitoring well EPA #5. The software is available only through VG Mass Lab Limited ("VG") to be used with a VG Lab-base GC/MS data system. It is our best information that IEA/N.J. does not have a VG Lab-base GC/MS data system. Therefore, our conclusion is that IEA/N.J. cannot meet the requirements of the method and cannot provide an accurate analysis of water soluble organics in the Runyon Watershed. The data package referred to above has previously been supplied to the N.J.DEPE and CPS Chemical.

In reviewing the IEA/N.J. letter, I noted that EPA #5 was not to be analyzed for water-soluble organics. It is my strong opinion that EPA #5 should be included in the sampling plan. This monitoring well is the only verified source of groundwater contamination by water-soluble organic chemicals. This sampling point would link the previous work to the proposed work. This is an extremely valuable quality control parameter.

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I would like to comment on some of the other topics discussed in the IEA/N.J. letter. They are as follows:

- Method validation - This is a great idea. The U.S. EPA has performed method validation studies for most of the U.S. EPA "accepted" methods. This is accomplished by choosing a managing contractor and 20 laboratories that are subcontractors to the managing contractor. Approximately three different matrices of a groundwater containing known amounts of the target compounds are analyzed by the laboratories following the analytical protocol. The results are statistically analyzed and the method performance criteria established. The cost of this work is 1-1.5 million dollars. I would heartily recommend that CPS Chemical Company, Inc. validate this method in order to provide N.J. DEPE and Perth Amboy with the rigorous analytical information necessary to make the data produced by this method the best possible.

  However, the data from the method as written will be useful. It will provide quantitative and qualitative data. Also, one will be able to increase the target compound list as experience with the methodology is gained. Certainly, this methodology is no different than "proposed" and "accepted" methodologies printed in SW-846 editions that have not yet been evaluated by the 20 laboratory round robin method validation. Take for example, Method 5100, Revision 0, in the 1990 edition of SW-846. This is an EPA "accepted" method but the 20 laboratory round robin was not initiated until 1992.

- Surrogates - The surrogates are the deuterated oligomer series starting with ethylene glycol. The synthesis of these compounds is scheduled for production by Cambridge Isotopes, Inc. on May 28, 1993. When this material passes Cambridge Isotopes QC then it will be sent to Pacific Analytical for percent oligomer analysis and GC/MS analysis by the "Trillium" method. This work will determine performance criteria for these surrogate compounds as well as the appropriate spiking level. The measurement of the target compound epichlorohydrin will be included.

- Direct Aqueous Injection - This method was proposed by IEA/N.J. as an alternative methodology. For the lower molecular weight water soluble organic chemicals, this method may indeed be superior to the "Trillium" method. Direct Aqueous Injection does not have a concentration

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step in the methodology. Therefore, it can only be a superior method for those water-soluble organic chemicals that can be eluted from a gas chromatographic (GC) column rapidly giving a very sharp chromatographic peak. I believe that this suggestion is a very wise addition to the semivolatile methodology proposed by Trillium. The direct aqueous injection method would be equivalent to a method for volatile water-soluble organic chemicals. The target compounds would include, but not necessarily be limited to the following:

- methanol
- ethanol
- isopropyl alcohol
- dioxane
- ethylene glycol
- diethylene glycol
- butyl ether
- ethyl ether
- isopropyl ether
- furfuryl alcohol

I heartily recommend that CPS Chemical Company, Inc. include the use of the direct aqueous injection GC/MS methodology to <u>each</u> of the groundwaters to be analyzed. This additional work will certainly increase their ability to detect water soluble organic chemicals and to protect Perth Amboy's source of drinking water.

If these comments are not clear, or if you have any comments, suggestions or questions, pleas call me at your convenience.

Best regards,

James S. Smith

James S. Smith, Ph.D.
President/Chemist

JSS/eh